



Co-funded by the  
Erasmus+ Programme  
of the European Union

# Top Ten 2020 Skills Project

**SKILL 1 - COMPLEX PROBLEM SOLVING  
PROBLEM SOLVING METHOD**



1. Complex Problem Solving

# SKILL 1 - Complex problem solving

## Problem solving method

- Aim – the procedure to follow for solving complex problem.
- Objectives:
  1. The goal of problem solving is to help the person identify and solve problems
  2. To teach general skills that will allow you to handle future problems more effectively
  3. To acquire knowledge and abilities for management and resolution problems.
- Content - Name the most important points/chapters of this topic.



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method

- Content
  - Problem solving method
  - Steps:
    - Problem identification
    - Structuring the problem
    - Looking for possible solutions
    - Making a decision
    - Implementation
    - Monitoring/seeking feedback.



Co-funded by the  
Erasmus+ Programme  
of the European Union





# SKILL 1 - Complex problem solving

## Problem solving method

Solving complex problems is one of the most important skills since we have to solve problems on a daily basis, some are more complex than others, but there is no one way in which all problems can be solved.

One of the main reasons why companies fail is because companies have poor problem solving mechanisms.

John Foster Dulles, Former US Secretary of State said:  
*"The measure of success is not whether you have a tough problem to deal with, but whether it is the same problem you had last year."*



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving methods

Problem solving involves to achieve goals and overcoming barriers. The stages of problem solving include identification of the problem, structuring the problem through the use of some forms of representation, and looking for possible solutions. Once possible solutions have been arrived at, one of them will be chosen through the decision making process.



The final stages of problem solving involve implementing your solution and seeking feedback as to the outcome.



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method

All problems have two things in common:

- *Objectives/Goals*. Goals will be anything that you wish to achieve, where you want to be.
- *Obstacles/barriers*. The barriers or obstacles that prevent achieving that goal.

For example, if the company has obtained very poor economic results and you need to improve the economic benefits of the company.

The objective → to improve the company's profits.

The obstacles → the barriers preventing the goal from being reached. The CEO needs to attempt to recognize these barriers and remove them or find other ways to achieve the goals of the organization.



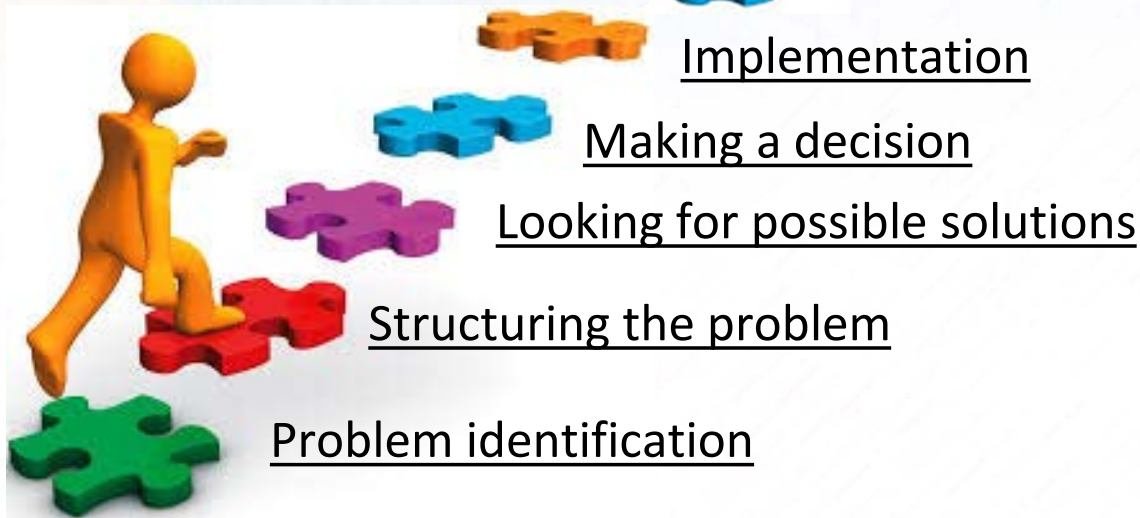
Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method

The resolution of complex problems in an effective way involves working in a series of steps, and these are the following:



Co-funded by the  
Erasmus+ Programme  
of the European Union





# SKILL 1 - Complex problem solving

## Problem solving method



### Problem Identification

In this stage we will have to :

- detect if there is a problem
- what type is that problem
- define the problem.

Identifying a problem is not a easy task.

Once a problem has been identified, its exact nature needs to be determined:

- what are the goal and barrier components of the problem? Some of the main elements of the problem can be outlined, and a first attempt at defining the problem should be made.



Co-funded by the  
Erasmus+ Programme  
of the European Union



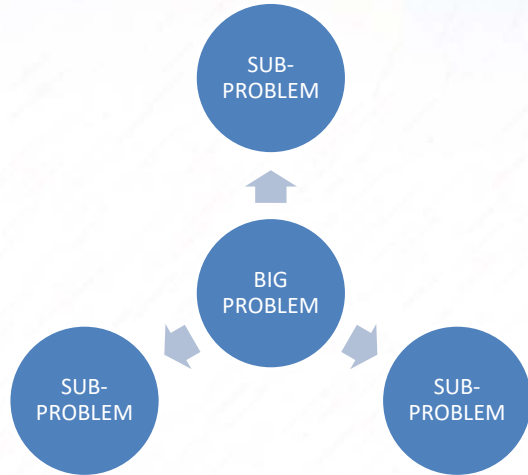


# SKILL 1 - Complex problem solving

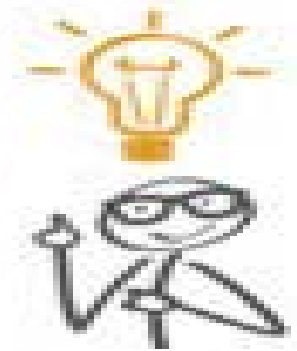
## Problem solving method

### Problem Identification

A good way to define a problem is to analyze in terms of goals and barriers. By doing this we can divide a big problem into smaller problems easier to manage.



It is important to get a good initial definition of the problem. A good definition of the problem is essential to better understand the problem and develop the following stages in a correct way.



Co-funded by the  
Erasmus+ Programme  
of the European Union

# SKILL 1 - Complex problem solving

## Problem solving method



### Structuring the problem

The second stage of the problem solving process → gaining a deeper understanding of the problem. For this we need to verify the facts and make a deeper analysis of the problem. Doing this we can have a representation of the problem. This is also a good opportunity to look at the key elements of the problem

To structure the problem and check if the elements of the problem are real, both the objective to be achieved and the obstacles to achieve it, this will help us to have a clearer vision of the problem.



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method



### Structuring the problem

A good way to represent the problem is using pictures, models or writing the problem. Some tools that can be useful to represent the problem are:

- Chain diagrams
- Flow charts
- Tree diagrams
- Lists

A visual representation makes it far easier to describe a problem.



Co-funded by the  
Erasmus+ Programme  
of the European Union



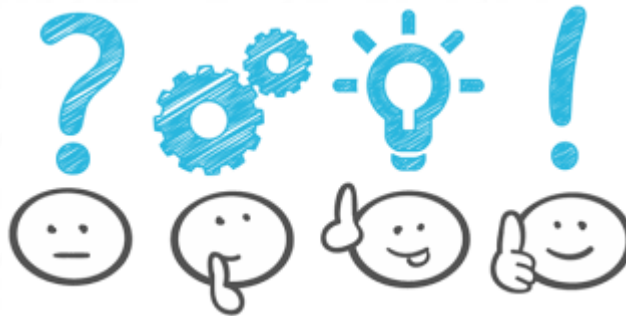
# SKILL 1 - Complex problem solving

## Problem solving method



### Looking for possible solutions

In this phase we have to start thinking about possible solutions to the problem. A brain-storming session, letting each person in the group express their views on possible solutions (or part solutions). In organizations different people will have different expertise in different areas and it is useful, therefore, to hear the views of each concerned. Encouraging participation and generating as many ideas and possible solutions as possible.



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method



### Looking for Possible solutions

Some ways that can be useful for the search of ideas and solutions can be:

DIVERGENT THINKING

CONVERGENT THINKING

BR.AINSTORMING



Co-funded by the  
Erasmus+ Programme  
of the European Union

# SKILL 1 - Complex problem solving

## Problem solving method



### Looking for Possible solutions

● Divergent or lateral thinking is characterized by being able to generate multiple and ingenious solutions to the same problem.

The elements necessary for divergent thinking include:

Releasing the mind from old patterns of thought and other inhibiting influences.

Bringing the elements of a problem into new combinations.

Not rejecting any ideas during the creative, problem solving period.

Actively practising, encouraging and rewarding the creation of new ideas.





# SKILL 1 - Complex problem solving

## Problem solving method



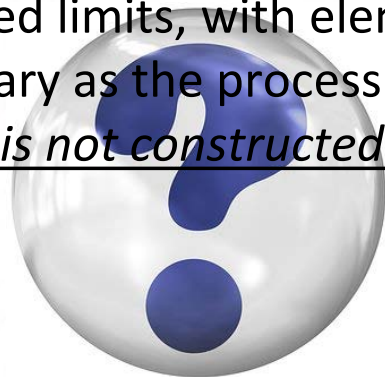
### Looking for Possible solutions

Often when people get stuck in trying to find a solution to a problem, it is because they are continually trying to approach it from the same starting point.



### CONVERGENT THINKING

Convergent Thought is used to solve well-defined problems whose characteristic is to have a unique solution, it moves in one direction, in a plane. In these cases a closed universe is faced, with defined limits, with elements and properties known from the beginning, which do not vary as the process of searching for a solution progresses. *In this case, a response is not constructed but the correct one is identified.*



Co-funded by the  
Erasmus+ Programme  
of the European Union




# SKILL 1 - Complex problem solving

## Problem solving method



### Looking for possible solutions



**BRAINSTORMING.** Is perhaps one of the most common techniques for generating a large number of ideas in a short period of time. It can be done individually, but it is more often practiced in groups

#### The Rules of Brainstorming:

- The facilitator should explain the purpose of the brainstorming session (outline the problem/s)
- The aim is to produce as many ideas as possible. Ideas must be concrete and must be shared sequentially
- You should not evaluate / judge anyone's idea.
- A fixed time must be defined to give the ideas to each problem .



Co-funded by the  
Erasmus+ Programme  
of the European Union

# SKILL 1 - Complex problem solving

## Problem solving method



### Making a decision

Decision-making is the act of choosing between two or more courses of action. In the process of problem-solving, decision-making involves choosing between possible solutions to a problem. We must select the best of the possible solutions that were reached in the previous stage. For that we have to do a deep analysis of the different solutions.

This is perhaps the most complex part of the problem solving process. It is important at this stage to also consider what might happen if nothing was done to solve the problem.



Co-funded by the  
Erasmus+ Programme  
of the European Union





# SKILL 1 - Complex problem solving

## Problem solving method



### Making decision process

- Listing Possible Solutions
- Setting a Time Scale and Deciding Who is Responsible for the Decision
- Information Gathering
- Weighing up the Risks Involved
- Deciding on Values
- Weighing up the Pros and Cons
- Making decision



Co-funded by the  
Erasmus+ Programme  
of the European Union

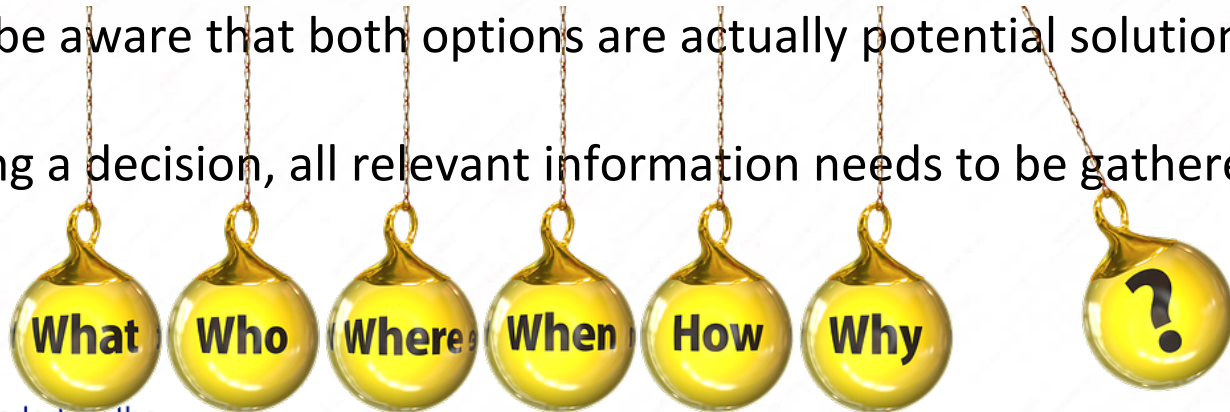
# SKILL 1 - Complex problem solving

## Problem solving method



### Making a decision

- Listing Possible Solutions/Options. This stage is important to the overall decision making processes as a decision will be made from a selection of fixed choices. Always remember to consider the possibility of not making a decision or doing nothing and be aware that both options are actually potential solutions in themselves.
- Before making a decision, all relevant information needs to be gathered.



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method



### Making a decision

- To weigh up the Risks Involved. It is also useful to consider what the risk of the worst possible outcome occurring might be, and to decide if the risk is acceptable.
- To weigh up the Pros and Cons. It is possible to compare different solutions and options considering the possible advantages and disadvantages of each.
- The collection of information and the analysis of the pros and cons should give you enough information to make a decision. If possible, it is best to allow time to reflect on a decision once it has been reached.





Co-funded by the  
Erasmus+ Programme  
of the European Union





# SKILL 1 - Complex problem solving


## Problem solving method



### Implementation

Implementation means acting on the chosen solution. During implementation more problems may arise especially if identification or structuring of the original problem was not carried out fully.

#### Implementation Involves

- 
- Being committed to a solution.
  - Accepting responsibility for the decision.
  - Identifying who will implement the solution.
  - Resolving to carry out the chosen solution.
  - Exploring the best possible means of implementing the solution.

# SKILL 1 - Complex problem solving

## Problem solving method

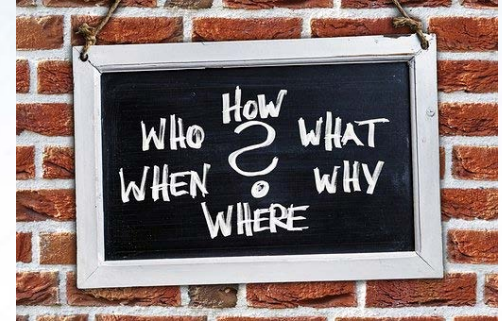


### Monitoring/seeking feedback

Feedback is needed and, therefore, it is important to keep a record of problem solving, the solutions arrived at and the outcomes. Ways of obtaining feedback include:

- Monitoring
- Questionnaires
- Asking others who may have been affected by your decisions.

It is important to encourage people to be honest when seeking feedback, regardless whether it is positive or negative



Co-funded by the  
Erasmus+ Programme  
of the European Union



# SKILL 1 - Complex problem solving

## Problem solving method

### Conclusions

The skills required for rational problem-solving include:

- The ability to gather information and facts, through research.
- The ability to set suitable problem-solving goals.
- The application of rational thinking to generate possible solutions.
- Good decision-making skills to decide which solution is best.
- Implementation skills, which include the ability to plan, organize and do.



Co-funded by the  
Erasmus+ Programme  
of the European Union







1. Complex Problem Solving

# Top Ten 2020 Skills Project

<http://www.topten2020.eu/>  
<https://www.facebook.com/toptenskills2020>

Co-funded by the  
Erasmus+ Programme  
of the European Union

Disclaimer: The Publication has been produced with the support of the Erasmus + Programme of the European Union. The contents of this page are the sole responsibility of partners and can in no way be taken to reflect the views of the NA and the Commission.